**Instructions for running *TMS-via-Arduino***

**Download and Installation**

1. Download the project

Github: <https://github.com/eugsokolov/tms-via-arduino/>

2. Install Python v3.4

For Linux/Mac, install Python: <https://www.python.org/downloads/>

For Windows, install WinPython: <http://winpython.github.io/>

3. Install the proper Python libraries

For Linux/Mac, manually install the libraries:

- pyserial: <http://pyserial.readthedocs.io/en/latest/pyserial.html>

- matplotlib: http://matplotlib.org/users/installing.html

For Windows, WinPython should already have the libraries built in

When installing, be careful to point to the right directories. You should now be able to run the Python script: *tms-program.py*

**Running the Program**

1. Edit the configuration file: *config.csv*

Configuration file must be saved in the same directory as the *tms-program.py* script file. Be sure to save the configuration file as a CSV (comma separated values).

What do the values mean?

- Name: the test participant's name

- Sex: the test participant's gender

- Iterations per user: number of iterations to display objects

- Screen: select display mode - display a single object or a side by side aka double

- Type: select type of object - image, text, or mouse

- Directory: location of objects - point to path of images, or text file of words (on Windows, must specify **full** path)

- TMS port: port of Arduino-TMS adapter - on Windows, usually COMS1, COMS2, etc.

- TMS before or after: do we wish to fire the TMS machine before or after showing an image?

- Fire iteration: specify when to fire the TMS as an array, ie [1, 2, 3] will fire 1st, 2nd, and 3rd iterations. Alternatively, we can specify random in which case a fair coin will be flipped to determine fire

- Time to fire: millisecond time when to fire before/after showing an image

- Event end: how to end the event? Keypress action or time?

- Event end time: if event end by time, how long between events?

- Refresh: refresh image after each iteration event?

- ISI step: show an ISI image between each iteration event? (on Windows, must specify **full** path)

- ISI step duration: if so, for how long?

- ISI end: show an ISI image at the end of the program run? (on Windows, must specify **full** path)

- ISI end duration: if so, for how long?

2. Run the script: *tms-program.py*

In Linux/Mac, open a terminal and run the script by executing the command: *python tms-program.py*

In Windows, open a Python editor such as IDLE or PyCharm and run the module (shortcut F5 sometimes)

3. Log

At the end of the trial, a log file will be created as *name-date.log*

**Optional**

Download Arduino to change adapter configurations

Arduino: <https://www.arduino.cc/en/Main/Software>

Edit the *tms.ino* file in the Arduino IDE.

Reupload the new program to the adapter.